

New and interesting mites
from the Geneva Museum LXX.
Oribatids from the Cape Verde Islands II
(Acari: Oribatida)

by

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With 29 figures

ABSTRACT

Twenty-nine species of Oribatid mites are listed from the Cape Verde Islands, five of them are new to science, they are described and illustrated. One of them represents a new subgenus of the genus *Acaroceras*: *Trichacaroceras* subgen. n. (Microzetidae).

INTRODUCTION

Antonius van Harten has contributed a great deal to a better knowledge of the arthropod fauna of the Cape Verde Islands (HARTEN 1988). I am very grateful to Dr. B. Hauser and Dr. C. Lienhard (Muséum d'Histoire naturelle, Geneva) who gave me the opportunity to study mites originating from soil samples recently collected by Mr A. van Harten.

Some results on Tarsonemidae are already in print (MAHUNKA & MAHUNKA-PAPP 1991). The present contribution presents informations on the 29 identified Oribatid species. Five species proved to be new to science, one of them necessitating the erection of a new subgenus within the genus *Acaroceras*.

My earlier investigations (MAHUNKA 1987) have already shown that the soil mite fauna of these islands is particularly interesting from a zoogeographical point of view. As far as their geographical situation is concerned (16° N, 24° W), the presence of an Afrotropical fauna might be expected. However, the dominant genera and even species are

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mainly characteristic of the Mediterranean Region, i. e. *Aphelacarus acarinus*, *Ctenacarus araneola*, *Haplochthonius sanctaeluciae*, *Sphaerochthonius splendidus*, *Cryptoplophora abscondita*, *Oppia arcidiaconae*, *Passalozetes africanus*.

The Palaearctic affinity of the fauna of the Cape Verde Islands is further supported by the following species with wider Palaearctic (Holarctic) distribution: *Haplochthonius simplex*, *Rhysotritia ardua penicillata*, *Epilohmannia cylindrica*, *Nothrus biciliatus*, *Multioppia laniseta*, *Scheloribates fimbriatus*.

Unequivocally tropical elements are the *Hoplophorella* species, *Acaroceras* (*T. africanus*, *Berlesezetes africanus*, *Africacarus calcaratus*, *Lamellobates* sp., *Paralamellobates ceylanicus* and two *Galumna* species. The new (endemic?) species, not listed here, according to their relationships, probably belong to both of these groups.

It has to be concluded from the above discussion that the Cape Verde Islands form part of the Palaearctic Region rather than the Afrotropical Region.

Furthermore, two interesting observations concerning the Oribatid fauna of these islands can be made based on the samples examined:

1. The most primitive Oribatids (Palaearcarida) and also other primitive groups ("Anchoribatida") are represented by high numbers of individuals and species. They are present in all samples, sometimes dominant or subdominant, e. g. *Ctenacarus araneola*.

2. The joint occurrence of two *Haplochthonius* species is noteworthy (*H. simplex* and *H. sanctaeluciae*). This is the first record of two very closely allied species of *Haplochthonius* in such a small area. It is even more striking when we consider that the islands are in fact poor in species, the numbers in each sample being generally much smaller than usually found in any biotope of Central Europe.

The length, height and width measurements reflect the smallest and highest values taken. When a long series of specimens was available at least five measurements of each were recorded.

LIST OF LOCALITIES

- No. 423: Santiago: São Jorge dos Orgãos, in litter, 13.II.1983.
 No. 468: Santiago: Boa Entrada, in litter, 7.V.1983.
 No. 502: Santiago: São Jorge dos Orgãos, in litter under *Grevillea robusta*, V.1983.
 No. 655: Santiago: São Jorge des Orgãos, in litter, IX.1983.
 No. 1532: Santiago: São Jorge dos Orgãos, in litter, I.1986.
 No. 1787: Santiago: São Jorge dos Orgãos, in litter, I.1988.
 No. 1821: Santo Antão: Ribeira Grande, in litter, 17-21.V.1988.
 No. 1882: Santiago: Serra de Malagueta, in litter, 29.V.1988.

LIST OF SPECIES

Aphelacaridae Grandjean, 1954

Aphelacarus acarinus (Berlese, 1910)

Locality: No. 502: 3 specimens.

Ctenacaridae Grandjean, 1954

Ctenacarus araneola (Grandjean, 1932)

Localities: No. 468: 9 specimens; No. 502: 35 specimens, No. 1787: 40 specimens; No. 1882: 1 specimen.

Parhypochothoniidae Grandjean, 1932*Parhypochothonius pilosus* sp. n.

Locality: No. 502.

Haplochothoniidae van der Hammen, 1959*Haplochothonius sanctaeluciae* Bernini, 1973

Locality: No. 1882: 3 specimens.

Haplochothonius simplex Willmann, 1930

Locality: No. 502: 11 specimens.

Sphaerochothoniidae Grandjean, 1947*Sphaerochothonius splendidus* (Berlese, 1904)

Localities: No. 502: 6 specimens; 655: 8 specimens; No. 1532: 6 specimens; No. 1787: 6 specimens.

Prothoplophoridae Ewing, 1917*Cryptoplophora abscondita* Grandjean, 1932

Localities: No. 502: 2 specimens; No. 655: 4 specimens.

Lohmanniidae Berlese, 1916*Lohmannia vanharteni* Mahunka, 1987

Localities: No. 502: 10 specimens; No. 655: 2 specimens; No. 1787: 5 specimens.

Papillacarus aequalis sp. n.

Locality: No. 1787.

Epilohmanniidae Oudemans, 1923*Epilohmannia cylindrica cylindrica* (Berlese, 1904)

Locality: No. 1787: 4 specimens.

Phthiracaridae Perty, 1841*Hoplophorella lienhardi* Mahunka, 1987

Locality: No. 655: 8 specimens.

Hoplophorella ligulifera Mahunka, 1987

Localities: No. 655: 7 specimens; No. 1787: 1 specimen.

Oribotritiidae Grandjean, 1954*Indotritia septentrionalis* Mahunka, 1987

Locality: No. 655: 5 specimens.

Euphthiracaridae Jacot, 1930*Rhysotritia ardua penicillata* Pérez-Iñigo, 1969

Localities: No. 655: 2 specimens; No. 1787: 1 specimen

Nothridae Berlese, 1896*Nothrus biciliatus* C.L. Koch, 1841

Locality: No. 1821: 8 specimens.

Gymnodamaeidae Grandjean, 1954*Licnoliodes* sp.

Locality: No. 1787: 5 specimens.

Microzetidae Grandjean, 1936*Acaroceras* (*Trichacaroceras* subgen. n.) *africanus* sp. n.

Localities: No. 1787; No. 502; No. 655.

Berlesezetes africanus (Balogh, 1958)

Locality: No. 655: 15 specimens.

Oppiidae Grandjean, 1951*Multioppia laniseta* Moritz, 1966

Localities: No. 1787: 1 specimen; No. 1882: 2 specimens.

Oppia arcidiaconoae Bernini, 1973

Localities: No. 468: 5 specimens; No. 1787: 17 specimens.

Scutobelbidae Grandjean, 1954*Suctobelbella harteni* sp. n.

Locality: No. 655.

Oribatulidae Thor, 1929*Scheloribates bicornis* sp. n.

Locality: No. 655.

Scheloribates fimbriatus Thor, 1930

Locality: No. 1787: 1 specimen.

Ceratozetidae Jacot, 1925*Africacarus calcaratus* Wallwork, 1965

Localities: No. 468: 1 specimen; No. 655: 5 specimens; No. 1532: 15 specimens; No. 1787: 8 specimens.

Hypozetes sp.

Locality: No. 1532: 8 specimens.

Oribatellidae Jacot, 1925*Lamellobates* sp.

Locality: No. 655: 16 specimens.

Paramellobates ceylanicus (Oudemans, 1915)

Locality: No. 423: 4 specimens.

Galumnidae Jacot, 1925*Galumna flabellifera* Hammer, 1958

Locality: No. 655: 2 specimens.

Galumna mariae Balogh, 1961

Localities: No. 468: 1 specimen; No. 655: 16 specimens; No. 1532: 8 specimens; No. 1787: 8 specimens.

DESCRIPTIONS

***Parhypochthonius pilosus* sp. n.**Measurements. — Length: 402–423 μm , width: 108–115 μm .

Prodorsum: Rostral part of prodorsum very wide, rostral apex only a little protruding from the slightly undulating anterior transversal margin (Fig. 1). Rostral setae arising on it, very near to each other. These and all other prodorsal setae conspicuously

pilose, their ratio: $exp < ro$ (60 μm) $> le$ (36 μm) $< exa$ (51 μm) $< in$ (55 μm). Sensillus (Fig. 3) very long, with 13-14 long branches and numerous short spicules and spines. The long branches are arranged on one side, the short ones over the whole surface.

N o t o g a s t e r : Elongated, narrow. Median furrow conspicuous. All setae fine and thin, but clearly ciliate. Setae c_1 (31 μm) and c_2 much shorter than c_3 (40 μm), d_1 shorter than d_2 or cp . Setae h_1 and ps_1 (60 μm) the longest of all (Fig. 5).

G n a t h o s o m a : Chelicera (Fig. 2) strong, seta chb thinner than cha . Palpal setal formula: 2-1-2-12 (Fig. 4), as depicted by GRANDJEAN (1934, fig. 4c) for *Parhypochtonius* sp.

V e n t r a l r e g i o n : Epimeral setal formula: 3-1-3-4. All setae minute. Anogenital setal formula: 9-1-1-4-5.

L e g s : All legs "tridactylous", empodium much shorter than lateral claws. A small spine is visible on the outer side of the trochanter of leg I (and also on the trochanter of palp) (Fig. 6). I was not able to study the spines of ϵ of tarsus I (Fig. 7). Setal formula of leg I: 1-6-(5+2)-(5+2)-(28+3)-3.

M a t e r i a l e x a m i n e d : Holotype: No. 502; 1 paratype from the same sample. Holotype: MHNG¹ and paratype (1334-PO-88): HNHM².

R e m a r k s : The interpretation of the "taxa" belonging to this genus is rather problematic. A final solution of the problem will be offered by a redescription of the type specimens, which has not been done so far. The new species is distinguished from the previously known taxa (cf. WILLMANN 1931, GRANDJEAN 1934, JACOT 1938, AOKI 1969) by the very long seta c_3 (very short in all the other "taxa"), the number of long branches of sensillus (maximum 8 in the other "taxa") and by the well pilose prodorsal and notogastral setae (smooth in the other "taxa").

Papillacarus aequalis sp. n.

M e a s u r e m e n t s . – Length: 559-567 μm , width: 235-251 μm .

P r o d o r s u m : Anterior margin of rostrum undulate (Fig. 8), papillae absent from this part, and also from basal part of prodorsum. Lateral margin of prodorsum angulate in front of setae exa . All setae conspicuously ciliate on both sides, with a short smooth distal part. Setae ex the longest (85 μm). Sensillus (Fig. 11) with 12-14 long and (on the other side) 4-5 short branches.

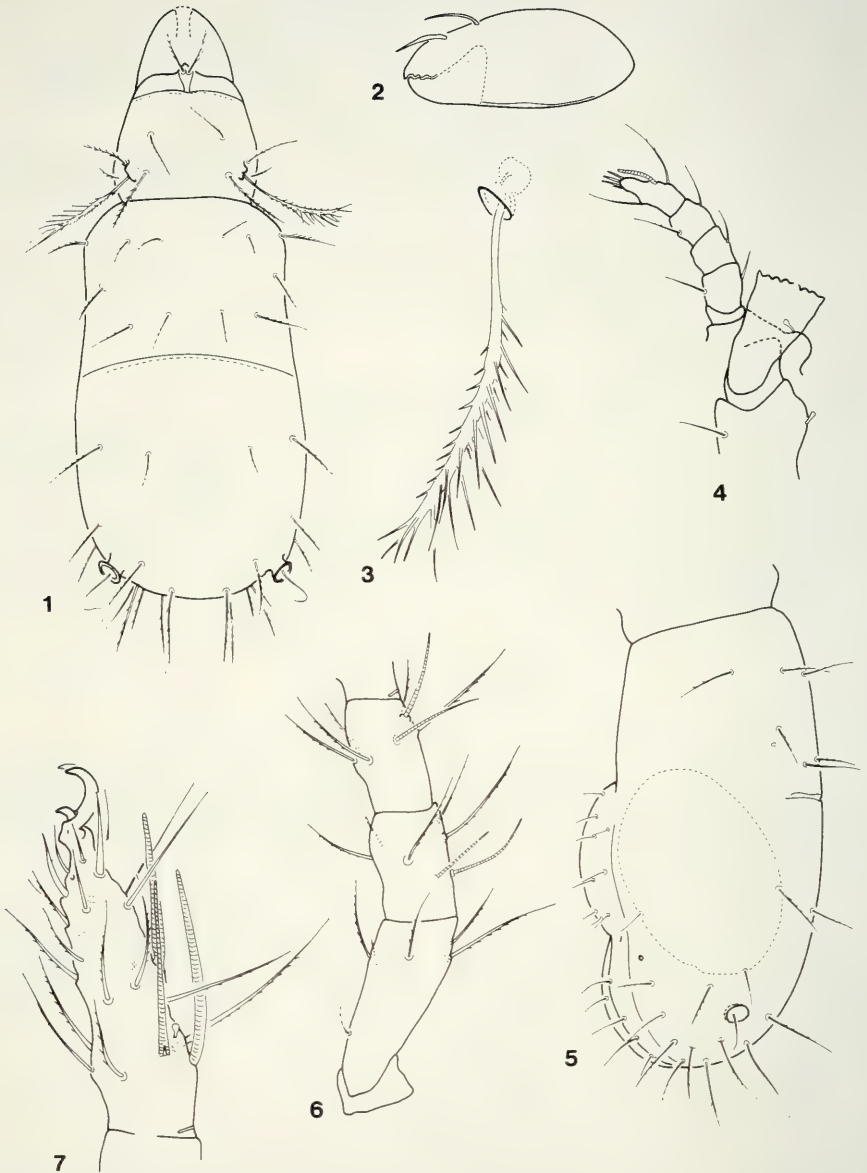
N o t o g a s t e r : Well covered by papillae but the surface of the transversal bands free. These latter are conspicuous, the first one without a median interruption, all the others interrupted medially. A fragmented band also present behind setae h_1 . No bands reach the lateral margin of notogaster, e.g. the first one arises only from the insertion points of setae c_2 . All setae conspicuously ciliate, the cilia of the neotrichial setae (Fig. 12) are longer than those of normal setae (Figs 13). Setae c_1 and c_2 of equal length (27-28 μm), setae c_3 more than twice as long (73-74 μm).

C o x i s t e r n a l r e g i o n (Fig. 9): Setal formula: 9-4-3-4. The median setae ($1a$, $2a$, $3a$ and $4a$) shorter than the others and smooth. All the others conspicuously ciliate, the cilia being notably long.

A n o g e n i t a l r e g i o n (Fig. 10): Very similar to the other species of the genus, but setae on the genital plates of different lengths and ciliation.

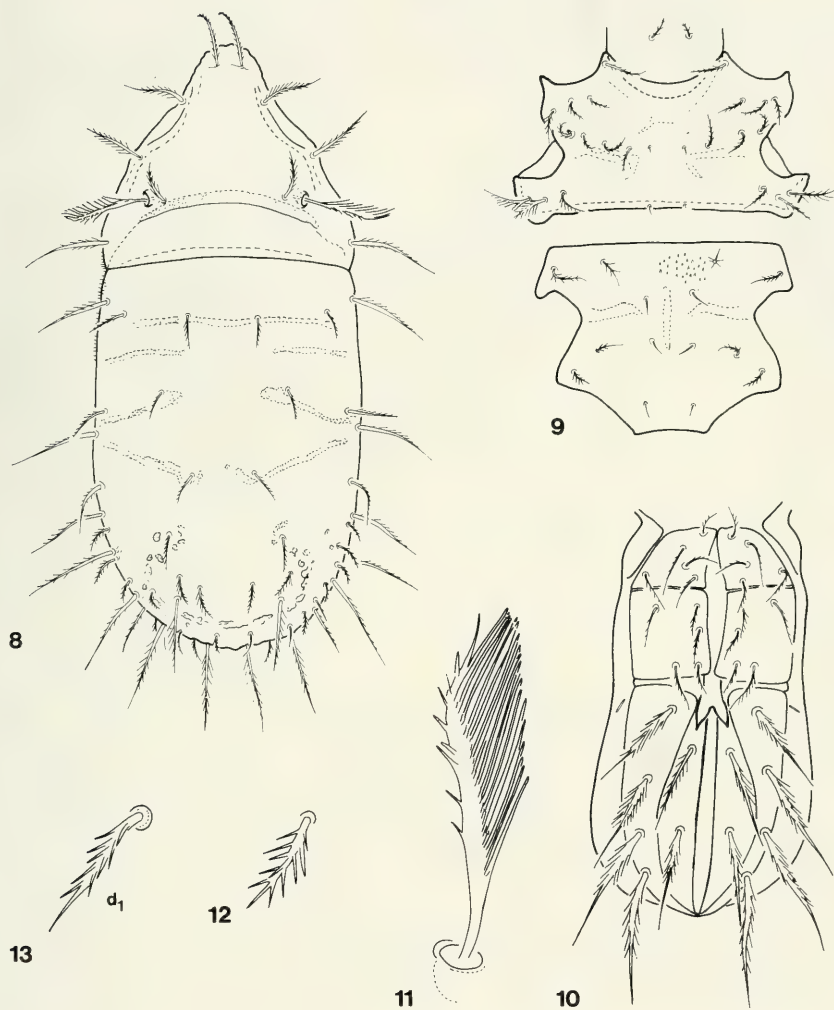
¹ MHNG = deposited in the Muséum d'Histoire naturelle, Genève.

² HNHM = deposited in the Hungarian Natural History Museum, Budapest, with identification number of the specimens in the Collection of Arachnida.



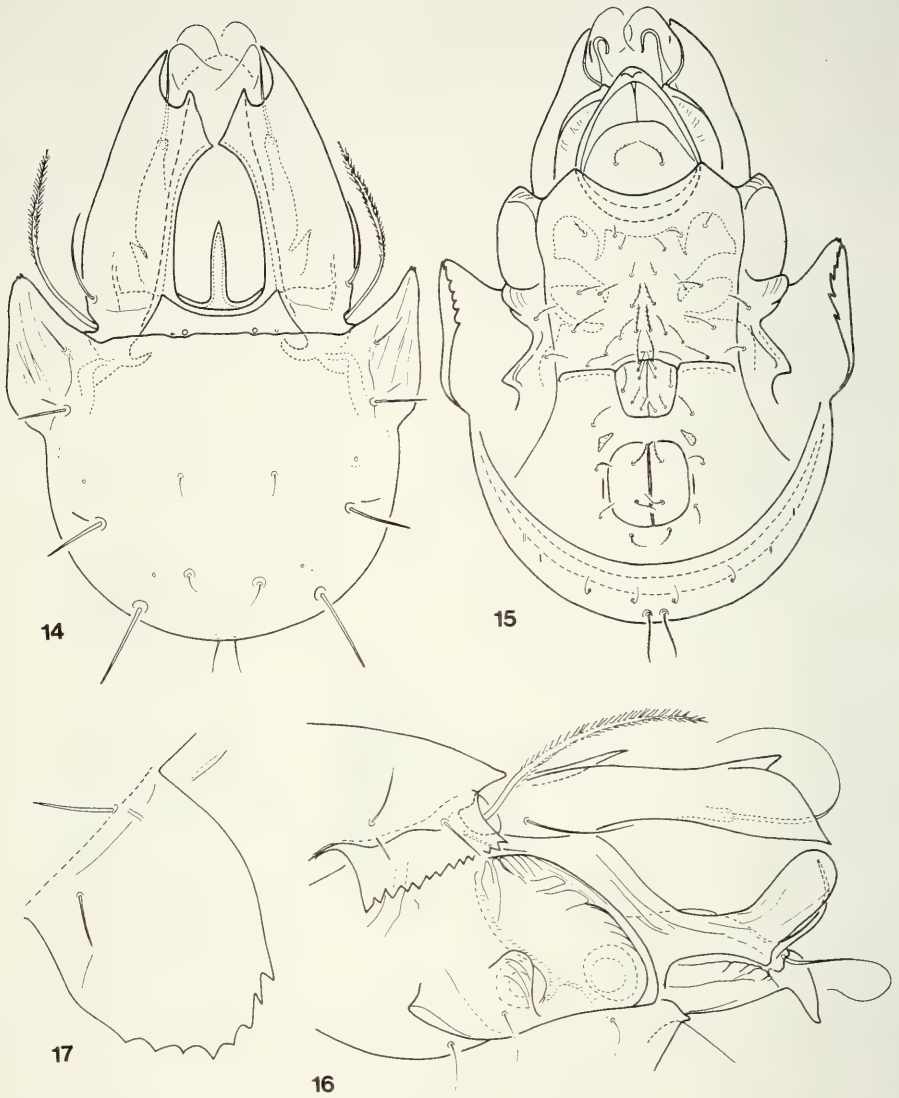
FIGS 1-7.

Parhypochthonius pilosus sp. n. — 1: dorsal side, 2: chelicera, 3: sensillus, 4: palp, 5: notogaster in lateral view, 6: basal segments of leg I, 7: tarsus of leg I.



FIGS 8-13.

Papillacarus aequalis sp. n. — 8: dorsal side, 9: epimeral region, 10: anogenital region, 11: sensillus, 12: neotrichial seta, 13: seta d_1 .



FIGS 14-17.

Acaroceras (Trichacaroceras subgen. n.) africanus sp. n. — 14: dorsal side, 15: ventral side, 16: prodorsum in lateral view, 17: pteromorpha.

Legs: Setae of femora, genu and tibiae with very long cilia. Solenidium ω , of tarsus I lacking a knee-shaped basal part.

Material examined: Holotype: No. 1787; 1 paratype from the same sample. Holotype: MHNG and paratype (1335-PO-88): HNHM.

Remarks: On the basis of several features (e.g. shape of the notogastral setae, form of the transversal bands) the new species is related to *P. angulatus* Wallwork, 1962, but it differs from *angulatus* by the equally long setae c_1 and c_2 and by the number of neotrichial setae (less in *P. angulatus*).

Acaroceras (Trichacaroceras subgen. n.) africanus sp. n.

Measurements. – Length: 276-32 μm , width: 216-230 μm .

Prodorsum: Rostral apex strongly bent downwards. The horn-like appendices characterize the genus (Fig. 16). Lamellae wide, with a short inner and a long and wide outer apex (Fig. 14), the incision between them deep. Lamellar setae arising on a long process from under the lamellae. Interlamellar apophysis very strong, with a simple proximal apex, arising clearly from the prodorsal surface. Interlamellar setae arising on the lamellar surface, near the lateral margin; they are short, less than half as long as the lamellae. Sensillus long, directed forward, distinctly ciliate on both sides.

Notogaster: Pteromorphae (Fig. 17) large, their margin dentate. Nine pairs of notogastral setae present, with great differences in their lengths: the two median pairs much shorter and finer than the lateral ones.

Coxisternal region: Lacking longitudinal striation. Epimeral setal formula: 3-1-4-6, first epimeres often bearing 4 pairs of setae. All setae ciliate, but setae 3a and 4a spiculate or spinose.

Lateral region of podosoma: Pedotecta 1 very large, with longitudinal wrinkles. Some wrinkles also visible on pedotecta 2. Circumpedal carina not reaching the margin of ventral plate.

Anogenital region (Fig. 15): A weak striation encircles the anal aperture. In front of the anal aperture one pair of light spots observable, they are narrow in the males and wider, guttiform in the females. Anogenital setal formula: 6-1-2-3. Genital and aggenital setae much stronger than the anal and adanal ones, all ciliate. The anterior genital setae are the longest of all setae on the ventral side.

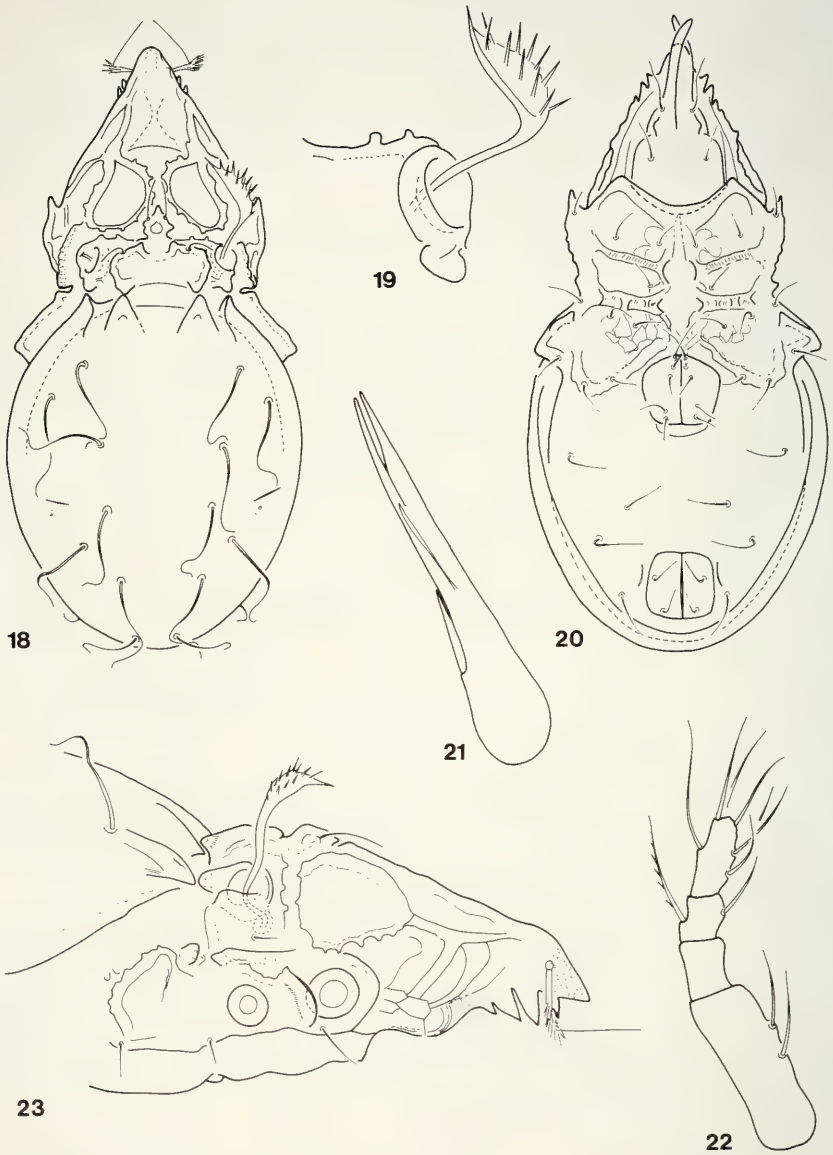
Material examined: Holotype: No. 1787; 2 paratypes from the same sample; 2 paratypes: No. 502; 3 paratypes: No. 655. Holotype and 4 paratypes: MHNG and 3 paratypes (1336-PO-88): HNHM.

Remarks. The type of the genus and all of the previously known species are neotropical. The new species unambiguously differs from them by its coxisternal neotrichy. This feature is mostly considered to be of supraspecific significance in higher oribatids, therefore, I erect on this basis a new monotypic subgenus, *Trichacaroceras* subgen. n., with the type species *africanus* sp. n.

Suctobelbella harteni sp. n.

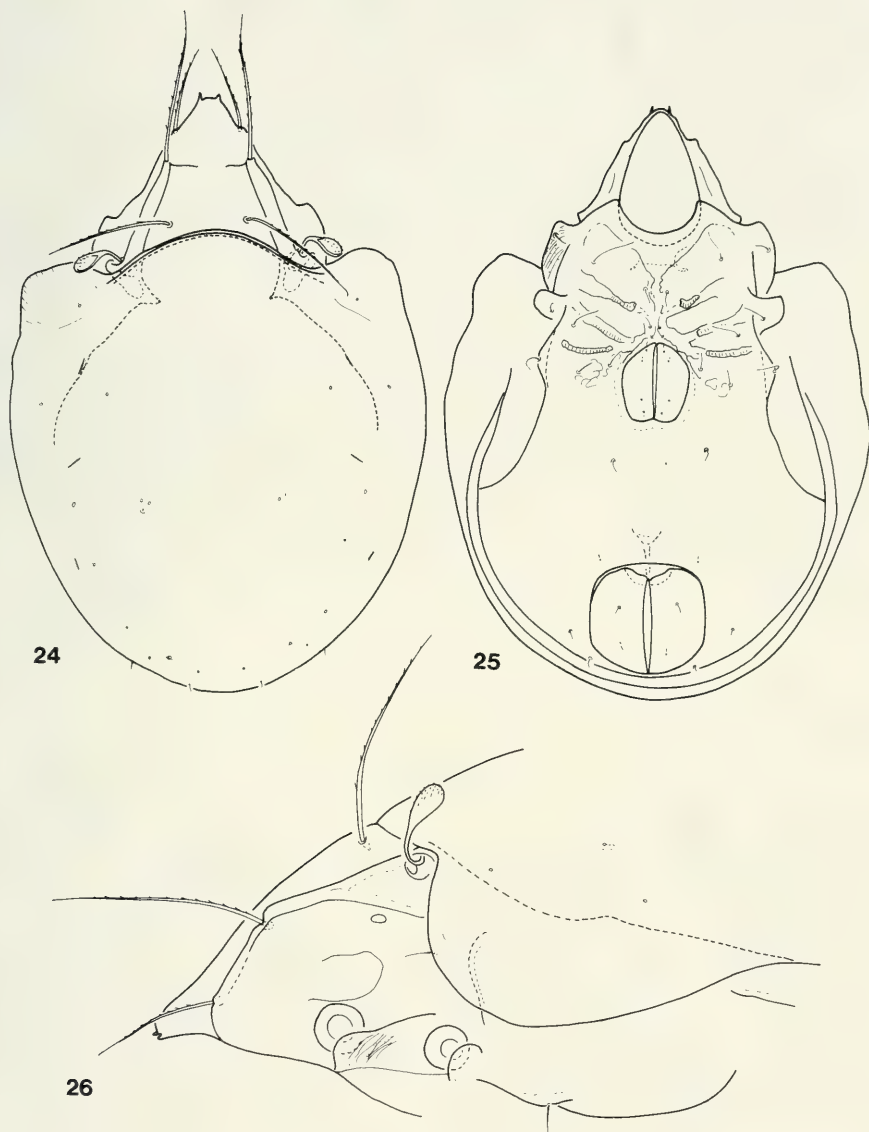
Measurements. Length: 202-213 μm , width: 101-107 μm .

Prodorsum: Rostrum elongated, nasiform. Upper outline of the prodorsum nearly straight in lateral view. Rostral margin with three well-developed and one smaller, triangular teeth. Rostral surface in front of the rostral setae granulated, other parts smooth.



FIGS 18-23.

Suctobelbella harteni sp. n. — 18: dorsal side, 19: trichobothrium, 20: ventral side, 21: chelicera, 22: palp, 23: prodorsum in lateral view.



FIGS 24-26.

Schelorbates bicornis sp. n. – 24: dorsal side, 25: ventral side, 26: prodorsum in lateral view.

A small area, near the ambulacrum of leg I, polygonate (Fig. 23). Fenestrate spots wide, short longitudinally (Fig. 18), lamellar knob triangulate anteriorly, connected with the bothridium by a distinct ridge on both sides. Basal lobe of bothridium well developed. Interbothridial ridges auricular. Head of sensillus (Fig. 19) wide, with 6-7 pairs of long spicules arranged in two longitudinal rows.

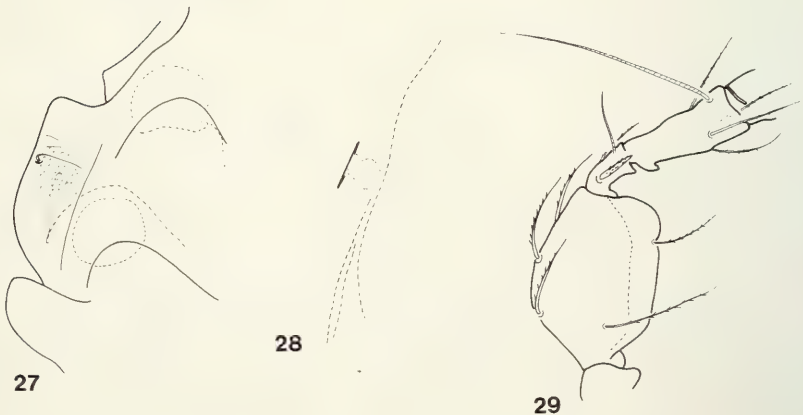
Notogaster: Notogastral teeth large, triangular, connected with each other. No light median spot. Notogastral setae – excepting p_2 – simple, but long, characteristically curved distally, S-shaped, nearly flagellate (Fig. 18). Setae p_2 short.

Ventral region (Fig. 20): Epimeral borders well observable, and clearly framing epimeres. Posterior border of coxisternal region wide, undulating. Epimeral areas on both sides well separated by a median area. Epimeral setal formula: 3-1-3-3. Epimeral setae short, simple. Anogenital setal formula: 5-1-2-3. Anterior two pairs of genital setae conspicuously long. All setae in this area without ciliation.

Chelicera and palpus as shown in Figs 21-22.

Material examined: Holotype: No. 655; 2 paratypes from the same sample. Holotype and 1 paratype: MHNG and 1 paratype (1337-PO-88): HNHM.

Remarks: The new species belongs to the "*nasalis*-species group". On the basis of the sparsely spinose sensillus it stands nearest to *Suctobelbella messneri* Moritz, 1971, however it is distinguished from *S. messneri* by the S-shaped notogastral setae and by the number of rostral teeth.



FIGS 27-29.

Scheloribates bicornis sp. n. – 27: lateral part of epimeral region, 28: Sacculus *Sa*, 29: basal segments of leg II.

Scheloribates bicornis sp. n.

Measurements. — Length: 470-532 μm , width: 328-376 μm .

Prodorsum: Rostrum convex medially, with one pair of sharp teeth laterally. Lamellae, sublammellae and prelamellae well developed, rostral and lamellar setae arising on them (Fig. 26). Ratio of the prodorsal setae: $ex < ro < le < in$ (97 μm). Sensillus clavate, its dorsal part barbed, basally smooth.

Motogaster: Conspicuously wide, the outline of the pteromorphae undulating in dorsal view (Fig. 24). Surface rarely punctate, pteromorphae finely striate. Ten pairs of alveoli and very short setae present (latter in posteromarginal position). Four pairs of comparatively large sacculi also well visible, *Sa* with characteristic striation (Fig. 28).

Ventral region (Fig. 25): Pedotecta 1 conspicuously rugose and punctate (Fig. 27), epimeral surface smooth, excepting some irregular, lighter spots. Epimeral borders only partly observable (e.g. posterior border of coxisternal region lacking), two of them developed, all the others short or reduced. Discidium narrow, circumpedal carinae long, reaching the lateral margin of the ventral plate. Epimeral setal formula 3-1-3-3, all setae long, *1c*, *3c*, and *4c* much shorter than *1b*, *3b* or *4c*. Genital aperture very large, genital plates much longer than wide. Anogenital setal formula: 4-1-2-3. All setae short and fine.

Legs: All legs tridactylous. Tibiae I and II with basal spur, femur 2 with wide blade-like formation ventrally (Fig. 29). Femora III and IV distinctly wrinkled on their inner side.

Material examined: Holotype: No. 655; 40 paratypes from the same sample. Holotype and 25 paratypes: MHNG, 15 paratypes (1338-PO-88); HNHM.

Remarks: The new species differs from all other species of the genus by its bidentate rostrum.

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